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SPAWAR Public Affairs & Corporate Communications  
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## Satellite Program Celebrates Key Milestone for Naval Operational Support

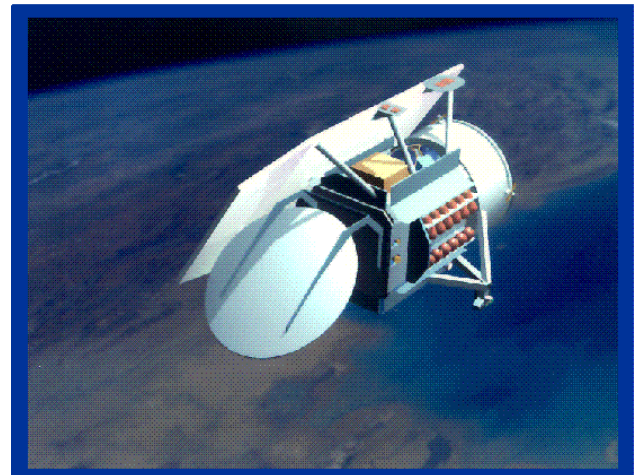
**BY: Andrea V. Houck**

SAN DIEGO – Orbiting since 1998, the Geodetic / Geophysical Follow-On (GFO) satellite program is vital to the Navy's ability to characterize the ocean environment.

The Navy recognized an important milestone Feb. 10 by marking the eight-year anniversary of the GFO program – a highly successful satellite program that measures sea surface heights and wave height by using a radar altimeter.

The satellite continues to provide critical meteorological and oceanographic (METOC) data to ships at sea and to a variety of modeling centers across the country throughout its eight-year lifespan.

“The GFO challenge was to deliver a sophisticated altimeter system at relatively low cost,” explained Navy Lt. Cdr. Therese Moore, the METOC space project manager at the Navy's Intelligence, Surveillance, Reconnaissance and Information Operations Program Office (PMW 180). “The small satellite approach has exceeded Navy's expectations. GFO data has proven critical to the Navy's characterization of the ocean needed for battlespace awareness. Although the satellite is starting to show its age, it continues to operate beyond its design life.”



*The Geodetic / Geophysical Follow-On satellite program provides critical data to support naval operations. The 300-kg spacecraft is approximately three meters long and includes multiple capabilities necessary for the precise meteorological and oceanographic data to ships and modeling centers nationwide.*

GFO provides considerable “bang for the buck” when compared to many commercial and government satellite programs. GFO's total on-orbit cost was \$85 million, which included development, building the satellite, testing and launch. PMW 180 was responsible for the satellite's procurement, which was built by Ball Aerospace & Technologies Corp., of Boulder, Colo.

“Ball Aerospace is proud of its long history of exceptional on-orbit performance,” said David L. Taylor, the company's president and chief executive officer. “GFO has proven that a low-cost mission can return highly valuable data for a variety of customer needs.”

Ball Aerospace completed the GFO for SPAWAR to transmit precise oceanographic information directly to ships at sea and to Navy shore-based facilities. This small satellite was designed to enhance environmental modeling and effectiveness of Navy weapon and sensor systems. Utilizing a space-borne altimeter, which measures sea surface height and wave height, the GFO provides a highly efficient method for collecting the

necessary information to support environmental predictions and to enhance warfighting capability. GFO's ocean observation precision is within 3.5 centimeters, a standard that is critical both to naval planners and to oceanographers. Oceanography is vital to the success of Antisubmarine Warfare (ASW) now and in the future. The satellite also supports optimum track ship routing, and ocean circulation and currents analysis, and monitors effects of tropical cyclones and severe storms for fleet safety at sea and storm surge in port.

Launched Feb. 10, 1998, from Vandenberg Air Force Base, Calif., the organization responsible for all DoD space and missile launch activities on the West Coast, the GFO encountered early difficulties with intermittent and periodic resets of its flight computer and with its global positioning system (GPS). To resolve the computer-reset problem, a series of software uploads were performed to update the on-board computer operating system. Challenges with the GPS performance was resolved by using satellite laser ranging to provide the precision orbit capability.

"The GFO Team successfully delivered a highly sophisticated on-orbit capability for relatively low cost," said Jay Berkowitz, the former SPAWAR METOC Systems deputy program manager, who now serves as the METOC space-based sensing capability technical lead for the University of Texas at Austin (Applied Research Laboratories).



*The Geodetic / Geophysical Follow-On Technical Team celebrates an important milestone Feb. 10 at the Naval Satellite Operations Center, Point Mugu, Calif., for surpassing eight years of success with the satellite program.*

According to Berkowitz, the program management team followed a "hands-on lightly" philosophy that fostered an efficient work culture to ensure the project was on cost and on schedule.

GFO, the follow-on to the GEOSAT-A program, has been controlled by the Naval Satellite Operations Center, Point Mugu, Calif., since its launch in 1998. In addition to providing critical naval operations support, GFO remains fully operational and continues to provide support to NASA, the National Oceanic and Atmospheric Administration and to a variety of academic communities.

SPAWAR, headquartered in San Diego, is often recognized for its Office of the Chief Engineer who designs the architecture and standards for FORCEnet, the Navy's vision for network centric warfare and an essential element of the Sea Power 21 philosophy. SPAWAR teams with its Program Executive Offices to acquire, align and field more than 100 command, control, communications, computers and intelligence programs and projects to make FORCEnet a reality.

These commands lay the foundation for increases in current and future capabilities in space, at sea or on land for today's Navy and Department of Defense activities.

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